Trend Study 16C-37-04

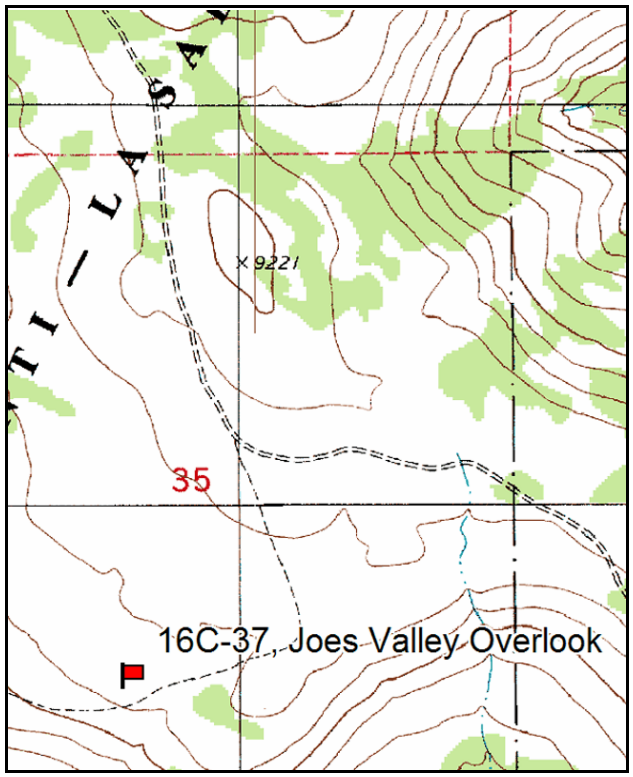
Study site name: Joes Valley Overlook . Vegetation type: Mixed Mountain Brush .

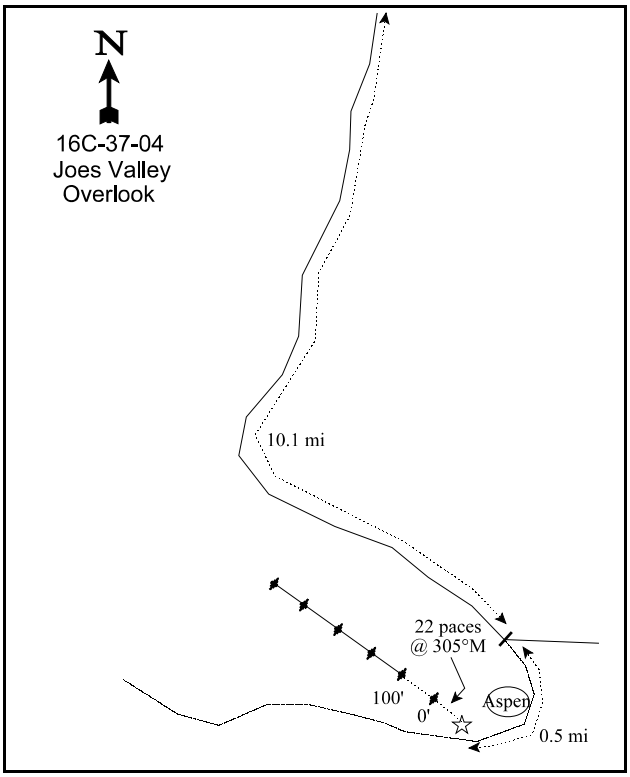
Compass bearing: frequency baseline 285 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95 ft).

LOCATION DESCRIPTION

From the intersection of Cottonwood Canyon (#040) road and Trail Mountain road, travel south 10.1 miles to a cattleguard. From the cattleguard continue 0.5 miles to a witness post. From the witness post to the 0-foot baseline stake, walk 22 paces at a bearing of 305°M. The stake has browse tag #28 attached. The witness post is a tall post on a dirt mound near the end of a contour trench.





Map Name: Mahogany Point

Diagrammatic Sketch

Township 17S , Range 6E , Section 35

GPS: NAD 27, UTM 12S 4349533 N, 481707 E

DISCUSSION

Joe's Valley Overlook - Trend Study No. 16C-37

The Joe's Valley Overlook study site was established in 1994 which monitors a mixed mountain brush community on a ridge east of Joe's valley reservoir and above Cottonwood Creek. The area is administered by the Forest Service. The site has a slope of about 13% with a west-southwest aspect. Elevation is approximately 8,900 feet. The area has been contour trenched in the past and seeded. The area has been closed to cattle grazing since the contour treatment, but some trespass is occurring. Deer and elk use this site during the spring and summer. Pellet group data from 1999 estimate 9 deer, 83 elk and 20 cow days use/acre (22 ddu/ha, 205 edu/ha, 49 cdu/ha). Most of the cattle pats are from last season, but cows were grazing the area when visited in 1999. Most of the elk and deer pellet groups appear to be several months old. Pellet group data from 2004 estimate 5 deer, 72 elk, and 22 cow days use/acre (12 ddu/ha, 177 edu/ha, and 54 cdu/ha). Most of the cattle pats are from last season.

Soil on the site is moderate deep with an effective rooting depth estimated at just over 16 inches. Texture is a clay with a slightly alkaline pH (7.4). Phosphorus is limited at only 5.5 ppm. Values less than 10 ppm can limit normal plant growth and development. Rock and pavement are fairly abundant on the surface and in the profile. Percent bare ground is relatively high and there is some erosion occurring but it is limited to the areas between contoured terraces. The erosion condition class determined soil movement as stable in 2004.

A variety of browse species occur on the site including serviceberry, mountain big sagebrush, low rabbitbrush, and snowberry. This site was chosen in part, to monitor a sparse and perceived declining population of mountain mahogany. This is a marginal site for true mountain mahogany because it is above its normal elevation range which is normally 5,000 to 7,000 feet. A few scattered individuals in the 4 to 6 foot range grow in the area, but none were sampled by the nested frequency belts or in the shrub density strips. The key browse species on the site consist of a moderately dense stand of mountain big sagebrush. This mostly mature population has adequate numbers of seedlings and young, a low decadency rate, and moderate to heavy utilization. Density has slightly increased from 2,460 plants/acre in 1994 to 3,080 in 2004. Snowberry is also abundant. The mostly mature population was moderately utilized in 1994 but has only been lightly used since. A small population of three foot tall heavily hedged serviceberry also grow on the site.

Due to the elevation and heavy elk and cattle use, the herbaceous understory is considered the key element of this site. Grasses and forbs combined accounted for 53% of the vegetative cover in 1994, 52% in 1999, and 39% in 2004. This site was apparently seeded in the past. Seeded grasses include: crested wheatgrass, intermediate wheatgrass and smooth brome which occur on the site, but the most abundant grass is Salina wildrye which provided 67% of the grass cover in 1994, 44% in 1999, and 44% in 2004. Smooth brome is the most common seeded species. It grows in thick patches along the contoured trenches. Use of the grasses is heavy in places, especially within the contoured trenches. Forbs are diverse and contain several desirable species, yet many of the common forbs are low growing species like mat penstemon. Alfalfa, a seeded forb, was found in small numbers during all readings.

1994 APPARENT TREND ASSESSMENT

Ground cover characteristics are adequate to protect the soil. Vegetation cover appears low for a mountain brush site, but herbaceous vegetation which is more effective at holding the soil in place, accounts for over half of that cover. The browse trend appears stable for all species due to adequate reproductive potentials, low decadency rates, and light to moderate utilization. The herbaceous composition is dominated by the less desirable Salina wildrye which makes up 67% of the grass cover. Continuous heavy grazing in early summer on the more preferred species will only increase the dominance of this grass.

1999 TREND ASSESSMENT

Trend for soil is stable. Relative percent cover of bare ground and litter have remained similar to 1994 estimates. There is some localized erosion occurring but the trenches on contour have minimized its effects. Trend for browse is stable. Use of the key mountain big sagebrush is heavier but vigor remains normal, recruitment has improved, and percent decadence is relatively low at 25%. Snowberry displays lighter use. Density has declined yet cover has increased and strip frequency has remained similar to 1994 estimates. The change in density may be due to the difficulty in identifying individual plants of this rhizomatous shrub. Trend for the herbaceous understory is considered stable. Sum of nested frequency for perennial grasses and forbs have increased slightly, but not enough to show a change in trend. Composition has improved since 1994. Nested frequency of the less desirable Salina wildrye declined significantly, while frequency of crested wheatgrass, smooth brome, and pinewoods needlegrass increased significantly. Forbs are diverse with a few desirable species represented, but many of the common forbs are low in value and low growing.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

2004 TREND ASSESSMENT

Trend for soil is considered stable. Percent bare ground relative cover has increased from 28% in 1994 and 1999, to 34% in 2004. Litter and vegetation both decreased slightly in cover, but nested frequency remained similar to 1999 values. Rock and pavement cover has slightly increased suggest some localized erosion is still continuing. Trend for key browse specie, mountain sig sagebrush is stable. The population has remained at about 3,000 plants/acre. Percent decadence has increased slightly, but young recruitment remains high enough to compensate for dying shrubs. Utilization is heavier than previous years, but vigor remains good. Snowberry populations appear to be stable and hedging continues to remain light. Trend for herbaceous understory is down slightly. Sum of nested frequency and percent cover for grasses have decreased from 44% of total vegetation cover in 1994, 36% in 1999, and 27% in 2004. Nested frequency of bluebunch wheatgrass and intermediate wheatgrass, both natives, increased significantly, mutton bluegrass and Salina wildrye decreased. Forbs remain diverse, but provide little cover and many are low growing species.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Management unit 16C, Study no: 37

Type	Species	Nested Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
G	Agropyron cristatum	a31	b59	a32	.46	.81	.45
G	Agropyron intermedium	a5	a11	b27	.02	.04	.24
G	Agropyron spicatum	a16	a22	b97	.40	.31	2.29
G	Bromus inermis	49	83	74	.93	2.54	1.80
G	Carex spp.	9	7	3	.21	.33	.15

Type	Species	Nested Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
G	Elymus cinereus	6	5	-	.15	.15	-
G	Elymus salina	$_{b}$239	$_{a}$185	$_{a}$158	8.26	5.36	4.14
G	Poa fendleriana	$_{b}$114	$_{b}$96	$_{a}$16	1.50	1.75	.19
G	Poa secunda	5	-	-	.04	-	-
G	Stipa pinetorum	$_{a}$24	$_{b}$58	$_{a}$16	.34	.86	.21
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		498	526	423	12.35	12.18	9.51
Total for Grasses		498	526	423	12.35	12.18	9.51
F	Androsace septentrionalis (a)	$_{a}$-	$_{b}$38	$_{a}$7	-	.11	.06
F	Arenaria fendleri	$_{b}$24	$_{b}$31	$_{a}$8	.15	.44	.13
F	Astragalus convallarius	3	-	7	.00	-	.39
F	Astragalus miser	10	11	7	.31	.33	.21
F	Astragalus tenellus	8	6	2	.04	.15	.03
F	Astragalus spp.	-	3	-	-	.15	-
F	Astragalus utahensis	-	-	3	-	-	.03
F	Chaenactis douglasii	-	7	2	-	.04	.03
F	Erigeron eatonii	2	3	-	.00	.01	-
F	Eriogonum umbellatum	12	17	8	.12	.25	.13
F	Hymenoxys richardsonii	33	41	55	.58	.78	.82
F	Lesquerella spp.	-	4	5	-	.03	.03
F	Lomatium spp.	-	4	-	-	.01	-
F	Lupinus argenteus	8	5	3	.15	.15	.38
F	Machaeranthera canescens	-	-	4	-	-	.06
F	Medicago sativa	13	7	6	.02	.18	.18
F	Penstemon caespitosus	$_{a}$41	$_{b}$79	$_{ab}$55	.52	2.25	1.22
F	Penstemon spp.	3	-	-	.03	-	-
F	Phlox austromontana	48	41	54	.51	.27	.60
F	Potentilla spp.	$_{a}$3	$_{b}$11	$_{a}$4	.00	.11	.01
F	Schoencrambe linifolia	-	2	3	-	.00	.00
F	Senecio multilobatus	-	2	3	-	.00	.03
F	Unknown forb-annual (a)	1	-	-	.03	-	-
F	Unknown forb-perennial	7	-	-	.04	-	-
Total for Annual Forbs		1	38	7	0.03	0.11	0.06
Total for Perennial Forbs		215	274	229	2.51	5.20	4.32
Total for Forbs		216	312	236	2.54	5.32	4.38

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Management unit 16C, Study no: 37

Type	Species	Strip Frequency			Average Cover %		
		'94	'99	'04	'94	'99	'04
B	Amelanchier utahensis	11	8	9	.56	.67	.63
B	Artemisia nova	0	2	2	-	.38	.30
B	Artemisia tridentata vaseyana	65	69	72	8.76	8.75	12.26
B	Chrysothamnus depressus	20	14	23	.07	.39	.72
B	Chrysothamnus viscidiflorus viscidiflorus	26	33	39	.43	.29	.58
B	Gutierrezia sarothrae	0	1	11	-	.01	.06
B	Pinus flexilis	-	-	-	-	.38	-
B	Symphoricarpos oreophilus	51	50	55	3.55	5.61	7.31
B	Tetradymia canescens	2	3	4	.03	.15	.01
Total for Browse		175	180	215	13.42	16.64	21.88

CANOPY COVER, LINE INTERCEPT --
Management unit 16C, Study no: 37

Species	Percent Cover	
	'99	'04
Amelanchier utahensis	-	1.64
Artemisia tridentata vaseyana	-	13.36
Chrysothamnus depressus	-	.50
Chrysothamnus viscidiflorus viscidiflorus	-	2.18
Gutierrezia sarothrae	-	.15
Pinus flexilis	3.00	2.59
Symphoricarpos oreophilus	-	7.84

KEY BROWSE ANNUAL LEADER GROWTH --
Management unit 16C, Study no: 37

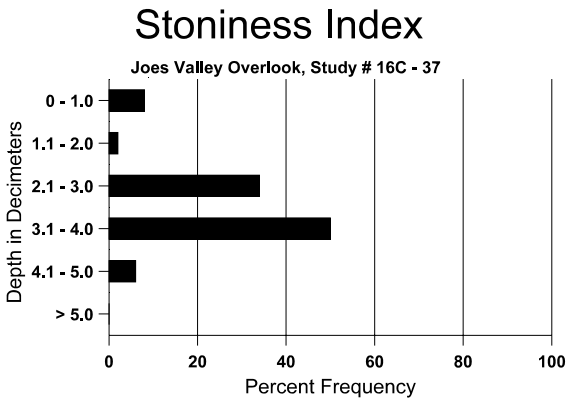
Species	Average leader growth (in)
	'04
Amelanchier utahensis	4.1
Artemisia tridentata vaseyana	2.5

BASIC COVER --
Management unit 16C, Study no: 37

Cover Type	Average Cover %		
	'94	'99	'04
Vegetation	28.10	35.87	35.57
Rock	4.41	1.75	2.28
Pavement	.48	7.40	8.17
Litter	31.17	35.45	34.20
Cryptogams	0	.00	0
Bare Ground	25.37	32.34	40.47

SOIL ANALYSIS DATA --
Management unit 16C, Study no: 37, Study Name: Joes Valley Overlook

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	ds/m
16.2	46.3 (16.5)	7.4	26.0	29.4	44.6	2.8	5.5	108.8	0.6



PELLET GROUP DATA --
Management unit 16C, Study no: 37

Type	Quadrat Frequency		
	'94	'99	'04
Rabbit	25	14	17
Elk	40	40	54
Deer	19	7	11
Cattle	1	3	4

Days use per acre (ha)	
'99	'04
-	-
83 (205)	72 (177)
9 (22)	5 (12)
20 (49)	22 (54)

BROWSE CHARACTERISTICS --
Management unit 16C, Study no: 37

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Amelanchier utahensis												
94	**280**	-	40	240	-	-	36	21	-	-	0	31/39
99	**180**	-	-	180	-	-	78	22	-	-	0	30/35
04	**180**	-	40	140	-	-	11	78	-	-	0	28/39
Artemisia nova												
94	**0**	-	-	-	-	-	0	0	0	-	0	-/-
99	**40**	-	-	40	-	20	50	0	0	-	0	7/15
04	**40**	-	-	20	20	20	0	0	50	-	0	9/24
Artemisia tridentata vaseyana												
94	**2460**	20	80	1880	500	780	30	0	20	3	3	17/32
99	**2960**	260	460	1760	740	620	39	24	25	5	5	17/29
04	**3080**	20	400	1740	940	420	50	29	31	10	10	14/27
Chrysothamnus depressus												
94	**800**	-	40	720	40	-	3	0	5	-	0	4/8
99	**560**	-	20	460	80	-	32	29	14	7	7	2/7
04	**880**	-	-	880	-	20	34	34	0	-	0	4/11
Chrysothamnus viscidiflorus viscidiflorus												
94	**1240**	-	20	1180	40	-	8	6	3	-	2	6/10
99	**1300**	-	80	1120	100	-	18	5	8	3	3	7/10
04	**1640**	-	-	1640	-	-	16	2	0	-	0	7/13
Gutierrezia sarothrae												
94	**0**	-	-	-	-	-	0	0	-	-	0	-/-
99	**40**	-	-	40	-	-	0	0	-	-	0	-/-
04	**300**	-	-	300	-	-	0	0	-	-	0	7/10
Symphoricarpos oreophilus												
94	**3120**	-	40	3060	20	-	41	3	1	-	0	13/25
99	**2300**	100	220	2080	-	-	4	0	0	-	3	13/28
04	**2840**	-	180	2660	-	-	15	2	0	-	0	10/23
Tetradymia canescens												
94	**40**	-	20	20	-	-	0	0	-	-	0	9/7
99	**60**	-	20	40	-	-	33	0	-	-	0	4/7
04	**120**	-	40	80	-	-	0	17	-	-	0	8/10